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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,233

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Thomas Hill

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EXAMINER

MARTINEZ, BRITTANY M

ART UNIT

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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/532,233	Applicant(s) HILL ET AL.	
	Examiner BRITTANY M. MARTINEZ	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

Applicants' arguments/remarks and amendments filed on August 13, 2008, have been carefully considered. **Claims 1-21** are pending in this application, with **Claims 1, 12, 15, and 19** amended and **Claim 21** added. **Claims 1-21** have been examined.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in the prior Office action.

1. **Claims 1-3 and 15-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US 5,332,705) in view of Broecker et al. (US 5,063,194).
2. With regard to **Claims 1, 3, and 15-16**, Huang discloses a process for regenerating a hydrogenation catalyst (Huang, c. 1, l. 8-14; "Abstract") comprising stripping at a temperature of about 260°C with a mixture of hydrogen and inert gas (Huang, c. 3, l. 20-24 and 63-64), and wherein the hydrogenation catalyst is formed by an active composition (palladium), which has been applied to a support and which has been used in a gas-phase selective hydrogenation of acetylene (Huang, c. 1, l. 8-30). Further, Huang discloses the hydrogen containing gas may also comprise methane (Huang, c. 3, l. 30-34).

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3. Huang does not explicitly disclose stripping carried out from 50 to 250°C (**Claim 1**); a nonporous, metallic support (**Claim 1**); or a woven mesh or knitted mesh metallic support (**Claim 2**).

4. With regard to **Claim 1**, the about 260°C of Huang would embrace the 250°C of the instant application.

5. With regard to **Claims 1-2**, Broecker discloses a palladium catalyst (Broecker, c 1, l. 5) suitable for selectively hydrogenating compounds containing a triple bond (Broecker, c 1, l. 49-53), wherein the active composition is applied to a metallic mesh, foil, or fabric such as heat resistant stainless steel fabric (Broecker, c 2, l. 12, 18-19, and 24-25).

6. Thus, it would have been obvious to one of ordinary skill in the art to modify the process of Huang with the nonporous, metallic support of Broecker because there would have been a reasonable expectation of success.

7. **Claims 4-5, 17, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US 5,332,705) in view of Broecker et al. (US 5,063,194) as applied to **Claims 1 and 3** above, and further in view of White et al. (GB 907,348).

8. The aforementioned prior art does not explicitly disclose nitrogen or a mixture of nitrogen and hydrogen used for stripping (**Claim 4**); stripping carried out from 70 to 250°C (**Claim 5**); stripping carried out from 100 to 150°C (**Claim 17**); or stripping carried out from 50 to 100°C (**Claim 21**).

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9. With regard to **Claims 4-5, 17, and 21**, White discloses a process for regenerating a hydrogenation catalyst (White, p. 1, l. 13-17) comprising stripping at a temperature of 150°C with a stream of hydrogen containing gas (White, p. 1, l. 55-66), and wherein the hydrogenation catalyst is formed by an active composition, which has been applied to a support and which has been used in selective hydrogenation of gasolines obtained from thermal cracking processes (White, p. 1, l. 13-17 and 70-71). Further, White discloses the hydrogen containing gas may also comprise other gases inert to hydrogen and the catalyst and support, such as nitrogen or lower-boiling normally-gaseous hydrocarbons (White, p. 2, l. 10-16). Further, White discloses the importance of operating at a lower temperature in order to prevent damaging the hydrogenation catalyst (White, p. 1, 88-99). Still further, in view of *In re Boesch*, the claimed numerical temperature limitations are considered to be result effective variables and therefore may obviously be predetermined and optimized at the time the invention was made by one having ordinary skill in the art.

10. Thus, it would have been obvious to one of ordinary skill in the art to modify the process of the aforementioned prior art with the stripping conditions of White in order to prevent damaging the hydrogenation catalyst (White, p. 1, 88-99).

11. **Claims 6-11 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US 5,332,705) in view of Broecker et al. (US 5,063,194) as applied to **Claim 1** above, and further in view of Cosyns et al. (GB 1,158,418).

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12. The aforementioned prior art does not explicitly disclose rinsing the hydrogenation catalyst with a nonpolar organic solvent or solvent mixture in addition to stripping (**Claim 6**); rinsing at ambient temperature (**Claim 7**); rinsing for a period of from 15 minutes to a plurality of days (**Claim 8**); the regeneration process carried out in situ (**Claim 9**); first rinsing the hydrogenation catalyst and subsequently stripping (**Claim 11**); and the regeneration process carried out in a supernatant solvent and/or in solvent circulated by means of a pump (**Claim 18**).

13. With regard to **Claims 6-11 and 18**, Cosyns discloses a process for regenerating a hydrogenation catalyst (Cosyns, p. 1, l. 10-18) comprising rinsing the hydrogenation catalyst with a nonpolar organic solvent at lower than 200°C (Cosyns, p. 2, l. 15-18 and 34-48) for a period of from 15 minutes to 24 hours (Cosyns, p. 2, l. 65-66) in situ (Cosyns, p. 2, l. 23-24), and then stripping at a temperature of 200°C with hydrogen (Cosyns, p. 2, l. 19-21), and wherein the hydrogenation catalyst is formed by an active composition, which has been applied to a support and which has been used in a gas-phase selective hydrogenation of acetylene (Cosyns, p. 1, l. 10-18 and 25-26).

14. With regard to **Claim 7**, in view of *In re Boesch*, this claimed temperature limitation is considered to be a result effective variable and therefore may obviously be predetermined and optimized at the time the invention was made by one having ordinary skill in the art.

15. With regard to **Claim 18**, Cosyns further discloses circulation of a solvent through the bed of the washed/deactivated catalyst (Cosyns, p. 2, l. 20-24 and l. 61-65). It is well known in the art that a pump is an obvious means of circulating.

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16. Thus, it would have been obvious to one of ordinary skill in the art to modify the process of the aforementioned art with the rinsing process of Cosyns in order to obtain an improved hydrogenation catalyst regeneration method (Cosyns, p. 1, l. 10-11).

17. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US 5,332,705) in view of Broecker et al. (US 5,063,194) and Cosyns et al. (GB 1,158,418) as applied to **Claim 6** above, and further in view of White et al. (GB 907,348).

18. The aforementioned prior art does not explicitly disclose the regeneration process carried out ex situ (**Claim 10**).

19. With regard to **Claim 10**, White discloses ex situ regeneration of the hydrogenation catalyst (White, p. 2, l. 78-81).

20. Thus, it would have been obvious to one of ordinary skill in the art to modify the process of the aforementioned art with the ex situ regeneration of White because there would have been a reasonable expectation of success.

21. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US 5,332,705) in view of Broecker et al. (US 5,063,194) as applied to **Claim 1** above, and further in view of Huang II et al. (WO 94/00232).

22. The aforementioned prior art does not explicitly disclose repeated regeneration of a hydrogenation catalyst, which comprises regenerating the hydrogenation catalyst two or more times by stripping or by rinsing and stripping and subsequently by oxidative

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treatment or a combination of stripping or rinsing and stripping and oxidative treatment
(**Claim 12**).

23. With regard to **Claim 12**, Huang II discloses that although regeneration is attained without necessitating additional or associated regeneration steps, it may be desirable to clean carbonaceous deposits from the catalyst support because stripping does not result in complete removal of carbonaceous deposits from the catalyst support. Thus, an occasional additional oxidation step may be necessary (Huang II, p. 12, l. 18-34).

24. Thus, it would have been obvious to one of ordinary skill in the art to modify the process of the aforementioned prior art with the additional regeneration steps of Huang II in order to obtain a regeneration process that prevents restriction of flow rate and pressure in the regenerated hydrogenation catalyst (Huang II, p. 12, l. 31-34).

25. **Claims 13-14 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US 5,332,705) in view of Broecker et al. (US 5,063,194) as applied to **Claim 1** above, and further in view of Hicks et al. (US 5,130,172).

26. With regard to **Claims 14 and 19**, Huang discloses palladium as a hydrogenation-active metal in the process for regenerating a hydrogenation catalyst (Huang, c. 1, l. 8-14; c. 3, l. 45-60; and "Abstract").

27. The aforementioned prior art does not explicitly disclose a thin-film catalyst
(**Claim 13**).

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28. With regard to **Claim 13**, Hicks discloses thin-film palladium catalysts (Hicks, Claims 1 and 18-19).

29. Thus, it would have been obvious to one of ordinary skill in the art to modify the process of the aforementioned prior art with the thin-film catalyst of Hicks in order to obtain a process capable of regenerating high purity hydrogenation catalysts (Hicks, c. 1, l. 32-34).

30. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US 5,332,705) in view of Broecker et al. (US 5,063,194) and Hicks et al. (US 5,130,172) as applied to **Claims 13-14 and 19** above, and further in view of Huang II et al. (WO 94/00232).

31. The aforementioned prior art does not explicitly disclose silver doped palladium (**Claim 20**).

32. With regard to **Claim 20**, Huang II discloses a process for regenerating a silver doped palladium hydrogenation catalyst (Huang II, p. 1, l. 8-14; p. 10, l. 20-21).

33. Thus, it would have been obvious to one of ordinary skill in the art to modify the process of the aforementioned prior art with the silver doped palladium catalyst of Huang II because there would have been a reasonable expectation of success.

Response to Amendments

Applicants' amendments filed August 13, 2008, with respect to the Specification and Claims have been fully considered and are accepted. The objections to the

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Specification and Claims filed May 13, 2008, and the rejections under 35 U.S.C § 112 filed May 13, 2008, have been withdrawn.

Response to Arguments

1. Applicants' arguments filed August 13, 2008, have been fully considered but they are not persuasive.
2. Acknowledgment is made of Applicants' argument that the claimed process would not have been obvious over the combination of Huang and Broecker because the references do not disclose or suggest stripping at from 50 to 250°C. However, Huang discloses that the stripping procedure *should* take place at a temperature ranging between *about* 260-400°C and does not disclose 260°C as a critical minimum temperature. Moreover, White discloses a process for regenerating a hydrogenation catalyst (White, p. 1, l. 13-17) comprising stripping at a temperature of 150°C with a stream of hydrogen containing gas (White, p. 1, l. 55-66), and wherein the hydrogenation catalyst is formed by an active composition, which has been applied to a support and which has been used in selective hydrogenation of gasolines obtained from thermal cracking processes (White, p. 1, l. 13-17 and 70-71). Further, White discloses the importance of operating at a lower temperature in order to prevent damaging the hydrogenation catalyst (White, p. 1, 88-99).
3. In response to Applicants' argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

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where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Huang, Broecker, White, and Cosyns all disclose the regeneration of a hydrogenation catalyst. White was used mainly to illustrate the known importance of operating at a lower temperature in order to prevent damaging the hydrogenation catalyst (White, p. 1, 88-99), thus the type of feedstock used is not relevant. Broecker was used mainly to show that it is well known in the art to apply an active composition, such as a palladium catalyst, suitable for selectively hydrogenating compounds containing a triple bond (Broecker, c 1, l. 49-53) to a metallic mesh, foil, or fabric such as heat resistant stainless steel fabric (Broecker, c 2, l. 12, 18-19, and 24-25), thus the type of feedstock and support used are not relevant.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRITTANY M. MARTINEZ whose telephone number is (571) 270-3586. The examiner can normally be reached Monday-Friday 9:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached at (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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